

Pattern of Commuting: A case study of Tirupati Pilgrim City

Dr.Y.SUJATHA, Assistant Professor, Dept. of Geography, S.V.University,
Tirupati-517502. Sujiganesh.2006@gmail.com

Dr.T.CHANDRASEKARAYYA, Assistant Professor, Dept. of Population Studies
S.V.University, Tirupati-517502. tcsdps.svu@gmail.com

Abstract

The phenomenon of commuting has received attention by the researchers focusing on the issue of fast economic and rapid population growth causing to severe problems in and around the urban areas especially in cities like Tirupati. In this study an attempt has been made to examine the spatial pattern of commuting to the famous pilgrim city of Tirupati. Present study is based on primary data collected from field survey by using cluster sampling design and simple random technic. For this study, 140 commuters were randomly selected from prominent places (which are staying points to return natives after their daily work) in Tirupati City. Data were collected from the selected commuters through the interview method by using pre-tested interview scheduled. The results showed differentials in the characters of commuters, and pattern of commuting to Tirupati pilgrim of city.

Keywords

Commuting, Direction, Mode, Distance, Time, Age at commuting, and Pilgrim City of Tirupati.

Introduction

In recent decades, universally an emerging trend shows that more and more people staying outside the cities and commuting every day for work and work related purposes, no exception in India as well. Population commuting is a daily travel behavior caused by the spatial separation between a person's place of residence and place of work. It can reflect the quality of daily life and the efficiency and fairness of urban space and, as a result, is an important research topic in urban planning, urban geography, and urban sociology (Koster, H.R.A and Rouwendal. J, 2013). In the Western countries, a great deal of research has been done on commuting theory and models (Yigitcanlar, T and Kamruzzaman. M, 2019), factors affecting commuting behavior (Santos, G et al, 2013), commuting and spatial imbalance (Suzuki. T and Lee, S, 2012), commuting effects (Hilbrecht. M et al, 2014) and other topics. Commuting is a significant form of spatial mobility of population, with the growing accessibility and connectivity, the

prominence of commuting is increasing all over the world. It acts as a major substitute to migration (Mahbub, 1997). Commuting helps in balancing of the workforce between residence and workplace over a day. It offers people the dual advantages of higher earnings from non-farm economic activities in urban areas keeping one foot in the farm-economy and thus reducing both the risks associated with longer-term migration, and the outgoing on food, shelter, healthcare and schooling' (Deshingkar and Anderson, 2004:3).

Commuting is an economic activity which acts as a link between residents and job location of workers in a spatial framework. It is closely related to the urban land development patterns of a particular area. In 'the geography of commuting' (Dickinson, 1957), commute pattern is an important dimension. It shows commuters' directions of movements, distance they cover daily, the time they take to commute, types of transit they depend on and the costs associated with these. Since these variables are often guided by a number of socio-economic and demographic variables such as religion, caste, age, gender, marital and educational status, family size, land holdings, and family income along with problems faced by commuters, these have also been discussed in this study. Many countries have shown interest to enumerate the commuters, their economy, directions of commuting, etc. (Champion et al., 2009 and Partridge et al., 2010). It is vital for the development of regional policies, transport planning and management, environmental policies, etc. In developing countries like India, there is scanty of information on the people who are on the move from both rural and urban to urban areas, especially like pilgrim city like Tirupati. Hence, in this study an attempt has been made to explore the commuter's characteristics, commuting pattern and problems faced by the commuters in Tirupati city.

Study Area

Tirupati is a city in Chittoor district of the Indian state of Andhra Pradesh. The city is home to most famous and important Vaishnavite shrine of Tirumala Venkateswara Temple and other historic temples and is referred to as the "Spiritual Capital of Andhra Pradesh". It is one of the eight Swayam vyaktha kshetras dedicated to Vishnu. Tirupati is a municipal corporation and the headquarters of Tirupati (urban) mandal, and of the Tirupati revenue division. Tirupati Urban Development Authority (TUDA) playing crucial role in developmental activities. As of 2011 census, it had a population of 2,87,035 making it the 9th most populous city in Andhra Pradesh. It had an effective literacy rate (7+ populations) of 87.6 percent. The urban agglomeration had a population of 4,59,985, of which males constitute 2,31,456, females constitute 2,28,529, It is the seventh most urban agglomerated city in the

state. It is the second biggest city in Rayalaseema after Kurnool. For the year 2012–13, India's Ministry of Tourism named Tirupati as the "Best Heritage City".

Tirupati has been selected as one of the hundred Indian cities to be developed as a smart city under Smart Cities Mission by Government of India. Tirupati is located at 13.65°N 79.42°E in the Chittoor District of South Indian State of Andhra Pradesh. It lies at the foot of Seshachalam Hills of Eastern Ghats, which were formed during the Precambrian era. The tourism sector with huge pilgrims is of great importance to the city. It is because of the presence of Tirumala Venkateswara Temple and a number of other temples in and around the city. It attracts large number of Pilgrims apart from tourists which helps the tourism department of the state in generating revenue. Tirumala is said to be one of the most visited religious sites on earth, and Tirupati Temple is currently a Guinness World Record holder for most visited temple in the world. Tourism most being pilgrims comprises a large portion of the Tirupati economy and become commercial city with avenue for many employments. So, it has been attracting large numbers of commuters for work and other purpose every day. Keeping the prominence in view, Tirupati has been selected for this study.

Importance

This study presents on the characteristics of commuters, pattern of commuting and problems faced by the commuters in the densely pilgrim city of Tirupati through commuting flows based on primary data. It provides a better understanding of how communities are spatial mobile from rural and small urban acres of city connected with hinterlands, which will be more useful in urban planning.

Objectives

The major objectives of the study are:

1. To study the characteristics of commuters in Pilgrim City of Tirupati.
2. To assess the Patterns of commuting to the city and
3. To examine the major problems paced by commuters in city.

Data and Methods

The study is based on primary data collected from selected areas of the pilgrim city of Tirupati, attracting huge number of commuters daily for various works. In this study, cluster sampling research design was used for selection prominent places of in the city. In this study, commuting has been considered as the daily spatial mobility of people between natives and

urban area (i.e. Tirupati City) for their daily main work. A total of 140 commuters were selected through simple random technic and data were collected through interview method by using pre-tested interview schedule during January and February, 2020. The sample commuters were commuted from three villages (Kottala, Ramapuram and Gangireddy Palle) and two small towns (Renigunta and Chandragiri) of Tirupati City hinterland. Data on characteristics of commuters, pattern of commuting and major problems by commuters were gathered, analysed and presented in form of frequency tables.

Results and Discussion

Data collected related to commuter's characteristics, pattern of commuting and major problems faced in Tirupati city have been analysed and results are discussed briefly hereunder.

Characteristics of Commuters

Commuting is the study of a daily mobile of population from labour surplus areas to labour demand areas (i.e. natives to workplaces). Commuting population is the total number of people travelling in given areas. Understanding how commuters characteristics such as religion, caste, age structure, gender, marital status, literacy, family income, landholding size etc influence spatial mobility of population among push-pull places can help scientists or governments make decisions on better urban planning.

Table-1: Characteristics of Commuters

S. No	Characteristics	Type	Number	Percent
1.	Religion	Hindu	91	65.0
		Muslim	27	19.3
		Christian	22	15.7
		Total	140	100.0
2.	Caste	Forward Caste	70	50.0
		Backward Caste	33	23.6
		Schedule Caste	27	19.3
		Scheduled Tribe	10	7.1
		Total	140	100.0
3.	Present Age of Commuters	25-30	33	23.6
		31-35	45	32.1
		36-40	40	28.6
		41 -50	15	10.7
		51 and above	7	5.0
		Total	140	100.0
4.	Gender	Male	84	60.0
		Female	56	40.0
		Total	140	100.0
5.	Marital Status	Unmarried	27	19.3

		Married	98	70.0
		Divorced/ Widow	15	10.7
		Total	140	100.0
6.	Educational Status	Illiterate	42	30.0
		Primary	30	21.4
		Secondary	47	33.6
		College	21	15.0
		Total	140	100.0
7.	Family Size	≤2 members	21	15.0
		3-4 members	47	33.6
		5 and above	72	51.4
		Total	140	100.0
8.	Size of Land holding	No land	50	35.7
		≤2 acres	47	33.6
		3-4 acres	28	20.0
		5 and above acres	15	10.7
		Total	140	100.0
9.	Family Income (Per month in Rs.)	≤10,000	75	53.6
		11,000-20,000	45	32.1
		21,000 and above	20	14.3
		Total	140	100.0

Religion

Religion is one of the socio-cultural factor influences in commuting. People with higher religiosity have less propensity to commute than the people with less religious beliefs and practices, because religious orthodox views and the restriction prevents them to work other places, In general, female commuters belonging to Muslim community have more constraint to work in open places (Nazish Naz and Jabir Hasan Khan, 2016). Table-1 shows that about two-thirds of commuter to Tirupati city belonged to Hindu religion followed nearly one-fifth Muslims and rest were Christians. Tirupati is famous pilgrim city having huge commercial activities and many temples for Hindus to worship. Hence, the more chance of commuting for people of Hindu religion to their daily work than other religion persons.

Caste

Caste is a social factor determines social status in Indian Community. In general, Forward Caste people hold better socio-cultural and economic status also more aware of outside opportunities, there by greater chance to commute than the other caste people. In this study, half of the commuters were forward caste followed nearly one-fourth were backward caste, about one-fifth were scheduled caste and rest were scheduled tribes (table-1).

Present Age

Age is biological aspect, also considered as a demographic variable in geographical studies. Age plays crucial role in determining for commuting pattern as people with young age tend to commute more than older age. It is almost universal that most of the commuters belong to working age-group, i.e. 25-60 years age group (Mahbub, 1997, Chandrasekhar, 2011, Mandal.B, 2015 and Honghu Sun, et al, 2020). Table-1 reveals that over four-fifths of commuters were in the prime working age group of 25-40 years, one-fourth were in 41-50 years and rest in 51 and above ages.

Gender

In general, men works at out of home and women confined to household chores. Hence, gender is a factor of importance, influencing commuting. Usually, men commute longer, further and more frequent compared to women (Goswami.B, et al; 2015 and Mandal, 2015). Men dominate in commuting over the women, shows gender disparity. It was found that nearly three-fifths of commuters were men and the rest was women. In general, women have played both roles inside and outside of home with household chores and work as additional earning members in peak agrarian season in rural areas. Apart from other constrains, in fact, traditional attitude towards women in society also causes less chance to commute.

Marital Status

In India, marriage is social section granted by society and legally permits the individuals to form a new family. Marriage creates responsibility of the family maintains to the persons. Hence, marital status of commuter is a major factor in determining the spatial behavior of persons. Thus, married people commute more as compared to unmarried with two simple reasons as married persons were commuting to maintain household responsibilities as well as the workspace commitments and they can look after the farm activities along with their non-farm jobs (Mahbub, 1997). Table-1 reveals that seven-tenths commuters were married and nearly one-fifth were unmarried, while the rest of commuters comprised of widowers, or divorced.

Educational Status

Education is a key factor for development of society. Better educational level gives social status, security and provides knowledge on outside areas, thereby greater chance to commute for better employment opportunities from natives to others areas. Earlier studies were observed that illiterates were had less chance to commute than literates (Nazish Naz, and Jabir Hasan Khan,

2016 and Honghu Sun, et al; 2020:5). Hence, it has a significant role in influencing the pattern of commuting to a city. The empirical literature devoted to understanding the determinant of the commuting pattern finds that a higher level of education is associated with longer trips in terms of distance. Table-1 depicts that three-tenths of commuters were illiterate and remaining were literate with different education status as primary (one-fifth), secondary (one-third) and the rest had college level.

Family Size

Family size is denoted by the number of persons living in the family. Size of family is one the determinant of commuting. Universally, members larger the family size has greater propensity to commute for two reasons as unemployment in natives and economic support to the family by gaining better employment and more earning in workplaces. Honghu Sun, et al (2020) found that among commuters, seven-tenths were living in family groups of three or more. Table-1 reveals that over eight-tenths of commuters were having family size of three and more members and rest had two members, mostly with marital dissolution having one family member.

Size of Land holding

In Rural India, the land provides social prestige as well as economic security and determines commuting of the population. Usually, people with higher size of landholding have little chance to commute, because most of persons spend time in cultivating their lands. It was found that commuters' work status has a close relation with possession of agricultural land (Mondal. B, 2015). It was found that low wages, highly pressurized agriculture land, the small size of land holding, were the major causes in nearby rural areas that pushed 72.6 percent people to seek the work in the Aligarh city (Nazish Naz and Jabir Hasan Khan, 2016). Table-1 reveals that little over one-third were not having lands, only one-third of commuters was having land size of ≤ 2 acres and remaining were having land size of 3 and above acres. The results showed that an inverse relation between size of land holding and the number of commuters.

Family Income

Family income is one the predominant factor in the determinants of commuting. Normally, families with a low income level encourage their member to commute to overcome economic constraints than families' higher income levels. In Kochi city of Kerala, Goswami. B et al (2015) found that the average monthly income of commuting workers was Rs. 11,864/-. In China, Honghu Sun et al (2020) noticed that commuter's personal income and family income are relatively balanced. Table-1 shows that a little over half of commuters were having a monthly

family income of rupees $\leq 10,000/-$, nearly one-third were having rupees of 11,000-20,000/- and the remaining were having rupees with 21,000 and above. The results showed that most of the commuters belonged to low as well as middle income groups.

Pattern of Commuting

For most people, a commuter is someone who lives in the periphery, travels to work on the urban core, and travels back home at the end of the working day. Research on commuting to cities indicates that although commuting remains common, the picture is becoming more complex with increasing periphery-to-periphery flows (Heisz and LaRochelle-Cote, 2005). Many studies have focused on rural commuting, (Green and Meyer 1997, and Mitchell 2005), but in pilgrim cities like Tirupati, the understanding of the multidirectional nature of commuting patterns is more limited. This study explores the multidirectional nature of commuting such as direction, mode and distance of travel, commuting time and money to commute, duration of commuting, working hours and occupation of commuters.

Tabl-2: Pattern of Commuting

S. No	Pattern	Type	Number	Percent
1.	Directions of Commuting	Rural-Urban	97	69.3
		Urban-Urban	43	30.7
		Total	140	100.0
2.	Mode of Transport	Bus	56	40.0
		Auto rickshaw	42	30.0
		Train	17	12.1
		Motorbike	20	14.3
		Bicycle	5	3.6
		Total	140	100.0
3.	Distance of Commuting (One way)	≤ 10 kms	73	52.1
		11-20	50	35.7
		21 and above	17	12.1
		Total	140	100.0
4.	Commuting Time (One way)	≤ 30 minutes	42	30.0
		31-45 minutes	70	50.0
		46 -60 minutes	21	15.0
		61 and above minutes	7.0	5.0
		Total	140	100.0
5.	Money to Commute* (Per day to one way)	\leq Rs.10/-	85	60.7
		Rs.11-20	35	25.0
		Rs.21 and above	20	14.8
		Total	135	100.0
6.	Duration of Commuting	≤ 5 Years	33	23.6
		6-10 Years	80	57.1
		11 and above	27	19.3

		Total	140	100.0
7.	Age at Commuting started	21-25	81	57.9
		26-30	35	25.0
		31 and above	24	17.1
		Total	140	100.0
8.	Working Hours	Up to 8 hours	29	20.7
		9-10 hours	80	57.1
		11 and above hours	31	22.1
		Total	140	100.0

Direction

Commuting is the daily spatial interaction between residence and workplace. Commute directions to urban areas depend on the availability of employment opportunities in towns/cities (Mandal. B, 2015: 56) apart from wages, distance, travel time and cost. Table-2 shows that about seven-tenths commuting to the Tirupati city from rural areas and remaining from small urban areas. In rural areas, the decrease of farm-income, employment and wage rates are less compared to urban areas, causes commute more population.

Mode of transport

Transport is an integral part of commuting. 'Mobility requires a combination of transport infrastructure, better services, and cheap means of transport with motorized and non-motorized'. Transport makes daily journey-to-work potential. There is a positive relation between transport network density and the rate of commuting (Partridge et al., 2010). Table-2 shows that two-fifths were commuting by bus, three-tenths travel by share auto rickshaw and remaining travelled through train, motorbike and bicycle. In the study majority of commuters depends on buses and share auto for traveling to Tirupati City, reveals necessity access to improve public transport system with more citie services connecting to neighbouring areas.

Distance and Commuting Time

Distance is the vital aspect in deterring commuting as distance increase requires more time and travel cost. As the distance from urban centers increases, the density of the transport network decreases. Earlier researchers (Champion et al., 2009; Partridge et al., 2010) found the decreasing trend of rural-urban commuting with increasing distance from the urban area. Table-2 reveals that half of commuters traveled within radius of ≤ 10 kms from Tirupati city; little over one-third traveled 11-20 kms and remaining were commuted a with distance of 21 and above kms for one way.

Time spent on commuting is an important parameter in studying commute pattern, because it shows how much time a commuter has to invest to access daily work. It is largely non-productive and reduces the free time. The inverse relationship between commuting time, health status and productivity of the commuters in their workspaces as well as at home has been brought out by earlier studies (Goswami.B et al; 2015 and Mondal.B,2015). Table-2 depicts three-tenths of commuters had spent ≤ 30 minutes, half of them spent a time of 31-45 minutes and the rest were spent 46 and above minutes for one way commuting.

Money spent

Money spent on commuting is a significant component in studying the commute pattern of a city which helps in identifying how much amount spend on commuting of his daily earnings. Moreover, occupation, travel time and mode of transport depend on money spent for commuting. Table-2 reveals that two-third of commuters spent an amount of Rs ≤ 10 , one-fourth spent Rs10-20 and the rest were spent Rs 21 and above for one way travel.

Age at Commuting

Age is one prime factor that determines commute of people as young and unmarried have a greater chance to commute than persons with older ages, because youngsters have fewer family obligations, play his role to raise family income. Table-2 reveals that nearly three-fifths started commuting at the ages of 21-25 years, one-fifth at 26-30 years and the rest at 31 and above years.

Working Hours

Number of working hours at the work place are a key factor that influences commuting of people as long as well as hard working discourage less commute to people, because it determines health conditions and well-being of commuters. Goswami. B et al (2015:7) in their study found that an overwhelming proportion of commuting workers were spending 8-10 hours of their daily work and average time spent was 8.2 hours. Table-2 reveals that over half of the commutes had spent 9-10 hours, little over one-fifth were worked in 11 and above hours. In the study, majority commuters having the occupation of petty business and working in unorganized sector, hence spending more time in their work. Only one-fifth of commuters had spent up to 8 hours on their daily work and these were working in the organized sector of occupations.

Occupation

Commuter's occupation is a significant alliance of commuting patterns because all commuters have been linked primarily to the availability and nature of work (Champion et al., 2009). Mondal. B (2015) found that all commuters are employed both in the organized and unorganized sectors of non-farm work. The present study examines only commuters who commute to their main work throughout the year. In this study three categories of occupation were considered. These were petty business (includes sellers of farm products and all types of small business with low investment), unorganized sector (contains construction works, unskilled/semiskilled works and all types of wage earners) and organized sector (comprises of skill workers, all types of regular time bound workers for salaries). Table-2 reveals that over half of commuters had an occupation of petty business, three-tenths were working in the unorganized sector and rest worked in organized sector.

Problems of Commuters

Commuting has pros in one side and cons in other side. Spatial mobility of the population may improve the economic conditions of commuters through work in urban areas. However, they have many constraints and have to face various severe problems in urban areas like Tirupati city by most floated pilgrim population. Goswami. B, et al (2015) examined the problem faced by the pedestrians in the Khoci city of Kerala. In this study, an attempt had been made to examine the major problems faced by commuters in Tirupati city; it will be useful in urban policy and planning.

Table-3: Major problems faced by commuters in Tirupati City

S. No	Major Problems faced*	Yes Number (%)	No Number (%)	Total Number (%)
1.	Rest room (Toilet)	84 (60.0)	56 (40.0)	140 (100.0)
2.	Long working hours	77 (55.0)	63 (45.0)	140 (100.0)
3.	Bus shelters access	93 (66.4)	47 (33.6)	140 (100.0)
4.	Transport access	98 (70.0)	42 (30.0)	140 (100.0)
5.	Health services access	70 (50.0)	70 (50.0)	140 (100.0)
6.	Govt. Canteens access	79 (56.4)	61 (44.6)	140 (100.0)
7.	Small working area	92 (65.7)	48 (34.3)	140 (100.0)
*Multiple responses stated by the commuters				

Table-3 provides information on major problems faced by the commuters in the Pilgrim city of Tirupati. The majority of commuters had faced with problem of restroom/toilet (two-thirds), long working hours (over half), less bus shelters (two-thirds), Transport (seven-tenths), Less access to health services (half), Less access to Govt. Canteens (over half) and Small working area (two-thirds). These problems are to be considered by the Tirupati Municipal Corporation and Tirupati Urban Development Authority while framing urban policy and planning.

Conclusion

The pattern of commuting to Pilgrim City of Tirupati varies with the socio-economic status and demographic profile of commuters. An observation of their characteristics reveals that two-thirds of commuters to Tirupati city belonged to Hindu religion, half of the commuters were forward caste, men dominate in commuting over the women (three-fifths), over four-fifths of commuters were in the prime working age group of 25-40 years, seven-tenths of commuters were married, seven-tenths were literate with different education level, over eight-tenths of commuters were having family size of three and more members, only one-fifth of commuters had 3 and above acres of land and over half of the commuters had monthly income of Rs-10,000.

An observation of the commuting pattern reveals that seven-tenths were commuting to the Tirupati city from rural areas, two-fifths of commuting by bus and three-tenths travel by

share auto rickshaw, half of commuters traveled within radius of ≤ 10 kms from Tirupati city, three-tenths of commuters had spent ≤ 30 minutes, two-third of commuters spent an amount of Rs ≤ 10 , nearly three-fifths started commuting at the ages of 21-25 years, over half of the commutes had spent 9-10 hours and over half of commuters had an occupation of petty business. In Pilgrim City of Tirupati, the majority of commuters faced major problems like restroom (toilet), long working hours, and access of bus shelters, transport, health services as well as Govt. Canteens besides small working area. Based on the findings, it is suggested that Tirupati Municipal Corporation and Tuda Urban Development Authorities planners should keep in mind the volume of commuters, pilgrims flow to Tirupati city every day apart from the rate of immigration and urban population in development activities like basic amenities, infrastructures and transport etc.

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